



ITW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Tarrerrias
Appl. No. : 10/589,900
Filed :
Title : METHOD OF PRODUCING A CUTTING BLADE AND CUTTING BLADE THUS
PRODUCED

Grp./A.U. : 3724
Examiner :

Docket No.: 15472NP

Honorable Commissioner of Patents
Washington DC 20231

REQUEST FOR CORRECTED APPLICATION PUBLICATION
UNDER 37 C.F.R. § 1.221(b)

Sir:

Errors appear in the the published application with respect to the above identified application for patent. It is respectfully requested that the application be republished in accordance with 37 C.F.R. § 1.221.(b) in that the error in the application are considered material mistakes which should be apparent from a review of the application as filed with a review of the application as published.

This response is being filed within two months of the publication date which was July 19, 2007.

More specifically, errors appear as follows:

The city of the inventor which appears as "Pont Du Cheateau" should be -Pont Du Château--.

The priority date of French Application 0403711 appears as "Aug. 4, 2004" should be -April 8, 2004--.

Appl. No. 10/092,205

Paragraph [0040] at the line starting "... d'améliorer la resistance" should be --d'améliorer la resistance--.

Submitted with this response is a copy of the application as originally filed and a copy of publication No. US2002/0172289A1 wherein the errors appearing in the claims have been highlighted to facilitate a review. In addition, a copy of the application data sheet correctly showing the Inventor information and priority data is included.

Should the reviewing official require any further information with respect to this matter, it would be appreciated if they would contact the undersigned attorney-of-record at the telephone number shown below.

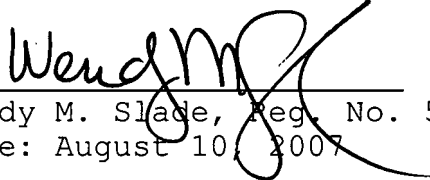
It is submitted that the mistake occurred on the part of the office and is material in that it is a mistake in the claim language which could lead to adverse effects of the applicant's rights with respect to future enforcement of the claims.

Although no fees are believed due, if fees are required, they may be charged to Deposit Account 04-1577.

Appl. No. 10/092,205

Respectfully submitted,

DOWELL & DOWELL, P.C.

By 

Wendy M. Slade, Reg. No. 53,604

Date: August 10, 2007

DOWELL & DOWELL, P.C.

Suite 406, 2111 Eisenhower Aveune

Alexandria, VA 22314

Telephone - 703 415-2555

Facsimile - 703 415-2559

E-mail - dowell@dowellpc.com



US 20070163128A1

(19) **United States**(12) **Patent Application Publication**
Tarrerrias(10) Pub. No.: **US 2007/0163128 A1**(43) Pub. Date: **Jul. 19, 2007**(54) **METHOD OF PRODUCING A CUTTING
BLADE AND CUTTING BLADE THUS
PRODUCED**

Publication Classification

(51) Int. Cl.
B26B 9/00 (2006.01)
B21K 11/00 (2006.01)
(52) U.S. Cl. 30/350; 76/104.1

(76) Inventor: Eric Tarrerrias, Pont Du Chateau (FR)

Correspondence Address:

Ralph A. Dowell of DOWELL & DOWELL P.C.
2111 Eisenhower Ave
Suite 406
Alexandria, VA 22314 (US)

(21) Appl. No.: 10/589,900

(22) PCT Filed: Feb. 18, 2005

(86) PCT No.: PCT/FR05/00390

§ 371(c)(1),
(2), (4) Date: Aug. 18, 2006

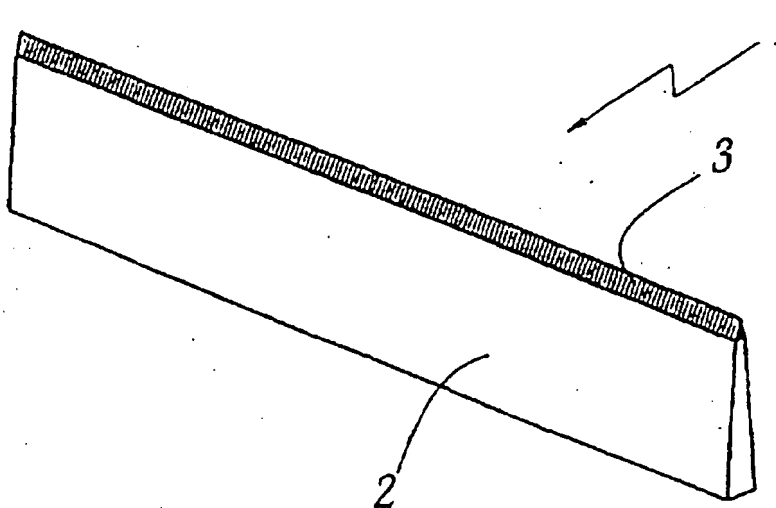
(30) Foreign Application Priority Data

Feb. 18, 2004 (FR) 0401616
Aug. 18, 2004 (FR) 0403711

April 8

(57) **ABSTRACT**

A method of fabricating a blade for a cutting tool, in particular for a knife, a pair of scissors, a saw, a household appliance, or indeed an industrial tool, the blade (1) being made of steel or an alloy of stainless steels and having at least one cutting edge (3; 103) extending over at least a portion of its periphery, the method being characterized in that it comprises the following steps: a) making a blade body (2; 102) possessing at least one free edge (F; 4) provided in the vicinity of the location of the or each cutting edge (3; 103); b) projecting a make-up material (M; M') in the form of a powder (5; 105) onto at least one free edge (F; 4), the hardness of the make-up material being greater than the hardness of the blade body; c) subjecting the make-up material powder (5; 105) to a laser beam (8) so as to form a bead (6) or strip (109) on at least a portion of said free edge (4; F); and d) forming the cutting edge (3; 103) in the bead (6) or strip (109) of make-up material (M; M'). Cutting tools fitted with a blade made in this way present great resistance to wear of the cutting edge of the blade.



[0021] the blade body is machined or ground at the same time as the cutting edge is being made by machining or grinding;

[0022] the blade body is machined or ground before the step of forming the bead of make-up material;

[0023] prior to step d) of forming the cutting edge, a hardening and tempering operation is performed on the blade body fitted with the bead or strip of make-up material; and

[0024] said removal of material is performed from an edge of the blade body opposite, relative to the main plane, from the edge of the blade body on which the make-up material is deposited.

[0025] The invention also provides a blade for a cutting tool, in particular a knife, a pair of scissors, a saw, a household appliance, or an industrial machine, the blade having at least one cutting edge on at least a portion of its periphery, and being characterized in that it comprises a blade body, the cutting edge being supported on one edge of said blade body.

[0026] The cutting edge and the blade body are made of at least two different materials.

[0027] A cutting tool, in particular a knife, a pair of scissors, a saw, a household appliance, or indeed an industrial machine, including at least one blade as defined above.

[0028] The invention can be better understood and other advantages thereof appear more clearly in the light of the following description of two implementations of a fabrication method in accordance with the invention, given purely by way of example and made with reference to the accompanying drawings, in which:

[0029] FIG. 1 is a perspective view of a cutting tool blade made in accordance with the invention;

[0030] FIG. 2 is an end view of the body of the blade shown in FIG. 1, during a step a) in a first implementation of the method, without the make-up material;

[0031] FIG. 3 is a face view showing steps b) and c) of this fabrication method, with an enlargement showing a type of powder made up of two elements;

[0032] FIGS. 4 and 5 are end views analogous to FIG. 2 showing step d) of the method; and

[0033] FIGS. 6 to 11 show a second implementation of the method.

[0034] The blade 1 shown in FIG. 1 is drawn in simplified form. It is also provided with a support or fastener means (not shown) for the blade, and/or handle means (likewise not shown) for the blade, e.g. a knife handle. The blade 1 presents a blade body 2 of dimensions that are slightly smaller than the overall size of the finished blade 1. The blade body 2 supports a cutting edge 3 in which the cutting edge proper, i.e. the zone that comes into contact with the substance for cutting, is constituted by the make-up material. The blade body 2 is made of at least one stainless steel, advantageously of food grade. For example it may be a standard steel in compliance with the AISI standard: 304L, 316L, 410, 420A, 420B, 420C, 425, 431, 440A, 440B, 440C, or it may be one of steels of the kind sold by the supplier Sandvik under the references 12C27 and 19C27.

The blade body 2 is made using conventional techniques, such as, for example: machining, molding, forging, sintering, grinding, cutting out, or cutting out by laser.

[0035] In a first implementation of the method, the body 2 of the blade has its sides 20 and 21 converging a little towards each other so to form a free edge on the body of the blade. Specifically, this free edge is a flat 4 that can be seen in FIG. 2 extending perpendicularly to a main plane P of the blade body 2. As shown in FIG. 3, in a second step of the method, a make-up material M is deposited in the form of a powder 5 or a mixture of powders on said free edge 4, and preferably under pressure. The powder or powder mixture comprises at least two elements 50 and 51 forming the make-up material M. One of these elements is a particle 50 of great hardness. Advantageously it is a titanium carbide. The other element is a particle 51 of stainless steel of food grade, advantageously of the same type as that making up the blade body 2.

[0036] Given the different physical and mechanical properties of the elements 50 and 51 making up the make-up material M in powder form, when they are projected onto the free edge 4 of the blade body, variations are observed in the flow of the powder 5. In order to maintain a uniform deposited bead 6 of powder, pairs of particles 50 and 51 of different types are connected together, e.g. by inclusion. Advantageously, particles 50 of titanium carbide are included in particles 51 of stainless steel. This inclusion may be total, with the titanium carbide then forming the core of a particle made up of both materials, or it may be partial, with the particle of titanium carbide being received in a socket formed in a particle of stainless steel.

[0037] In another configuration, the titanium carbide particles 50 are agglomerated with one another by a binder so as to obtain agglomerations of titanium carbide particles of a size that encourages flow thereof.

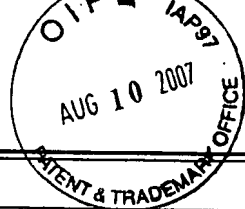
[0038] In a variant, the powder 5 is made uniform by means of a binder serving to bond together the particles of stainless steel or titanium carbide.

[0039] A powder 5 is thus prepared which, in spite of the differences in the density and/or shape of the particles 50 and 51 making it up, nevertheless presents a composition that is uniform at all points along the bead 6 of powder 5 that is deposited on the free edge 4 of the blade body 2, with the particles 50 and 51 being distributed regularly, overall.

[0040] At the same time as this powder or powder mixture is projected under pressure, it is subjected to a laser beam 8 simultaneously with deposition thereof so as to raise it to a melting temperature such that the bead 6 of powder 5 merges intimately with the blade body 2. That technique is known in the field of surface coatings as being a method for applying a facing. As an example illustrating this technique as such, reference can be made for example to the Internet site www.irepa-laser.com, or to the publication "Traitement de surface d'un gaz léger par plasma produit par laser en vue d'améliorer la résistance mécanique" [Surface treatment of a light gas by a plasma produced by laser in order to improve mechanical strength] by Mr. Sicard, Gremi, Orleans.

[0041] Once the bead 6 has been deposited and merged onto the edge 4, a finishing operation needs to be performed in order to form the cutting edge 3 proper. This operation

la.



APPLICATION DATA SHEET

Electronic Version v14

Stylesheet Version v14.0

Title of Invention	METHOD OF PRODUCING A CUTTING BLADE AND CUTTING BLADE THUS PRODUCED
Application Type: regular, utility Attorney Docket Number: 15472NP	
Correspondence address: Customer Number: 000293 *000293*	
Continuing Data: This is a National Stage of FR application number PCT/FR2005/000390, filed 2005-02-18, now Pending.	
Priority Data: Doc.No: 0401616; Country - FR; Date: 2004-02-18 us-priority-claimed Doc.No: 0403711; Country - FR; Date: 2004-04-08 us-priority-claimed	
Inventor Information: <u>Inventor 1:</u> Applicant Authority Type: Inventor Citizenship: FR Given Name: Eric Family Name: TARRERIAS City of Residence: Pont du Chateau Country of Residence: FR Address-1 of Mailing Address: 42 chemin du Petit Pan Address-2 of Mailing Address: City of Mailing Address: Pont du Chateau State of Mailing Address: Postal Code of Mailing Address: F-63430	

Country of Mailing Address: FR

Phone:

Fax:

E-mail:

Attorney Information:

practitioner(s) at Customer Number:

000293

000293

as my attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith.

Publication Information:

Suggested Figure for Publication -

Suggested Classification -

Suggested Technology Center -

Total Number of Drawing Sheets - 3



A METHOD OF FABRICATING A CUTTING BLADE, AND A CUTTING
BLADE

The invention relates to a method of fabricating a
blade for a cutting tool, in particular for a knife, a
5 pair of scissors, a saw, a household appliance (which may
optionally be electrical), or indeed an industrial
machine, the blade having at least one cutting edge
extending over at least a portion of its periphery.

In the meaning of the invention, a cutting tool of a
10 household appliance includes chopper or slicer blades,
regardless of whether the cutting tool possesses a blade
provided with an edge that is rectilinear or not
rectilinear, and regardless of whether it is driven
manually or by external motor drive. By way of example,
15 the tool may be an industrial machine having a circular
blade, or indeed an annular blade, and suitable for use
in the agrifood business, and in particular in slaughter
houses.

Such blades are used for slicing or cutting various
20 materials and they are made of metal or metal alloy. In
particular, such blades are made of stainless steels of
hardnesses that are adapted to the use intended for the
tool. In all cases, such steels advantageously comply
with the standards and/or regulations in force concerning
25 food-grade materials, i.e. the physical and/or chemical
properties of materials that come into contact with food.
It is also possible to encounter blades made from one or
more ceramics or other materials suitable for cutting or
slicing when used under particular conditions.

30 What these blades have in common is being provided
with at least one cutting edge, said edge forming the
zone of the blade that comes into contact with the
material for cutting, via at least one point. Such
blades are liable to present premature wear of the
35 cutting edge, in particular when used repeatedly and/or
when used badly. It is then necessary to re-form the
cutting edge by sharpening, filing, or grinding. In any

event, this operation cannot be repeated indefinitely. It requires the cutting edge to be formed in a zone of the blade, close to the back of the blade and of thickness that increases each time this operation is repeated.

Methods are known in which the cutting edge is of hardness greater than the hardness of the remainder of the blade in order to limit wear thereof. In particular, WO-A-03/000457 describes a method in which, on the blade of a saw, material is deposited in powder form, mixed and solidified with the help of a laser, prior to being shaped to form the cutting edge. The cutting edge is formed between two rollers of the rolling mill type, which serve to form the cutting edge while hot. The laser serves to bring the material up to temperature. Such a device is particularly adapted to blades in strip form, but it is not suitable for use on any type of blade. In addition, the bond between the body of the blade and the shaped material is not as good as it might be.

So-called "facing" methods are also known in which a covering of hard material is deposited on an edge of a cutting blade. Such methods, e.g. making use of microwelding, are described in Patent Abstracts of Japan, Vol. 2000, No. 17, JP-A-01029288.

Patent Abstracts of Japan, Vol. 0120, No. 27, JP-A-62 18 1836 describes using a film for facing the cutting edge of a blade by ion plating. That can also be done by vaporization under the effect of a flame as described in EP-A-0 707 921. It is also possible to envisage depositing make-up material on a blade after heating the material to a temperature below its melting temperature and pressing it against the body of the blade so that it adheres thereto, prior to forming the cutting edge, and this is described in particular in DE-A-3 208 153.

In none of those documents is there described a method enabling a make-up material to be bonded in

effective and durable manner with the remainder of the blade so that once the cutting edge has been formed the strength and mechanical properties of the assembly are preserved.

5 Those are the drawbacks that the present invention seeks more particularly to remedy by proposing a method of fabricating a blade that enables the cutting edge of the blade to be preserved, and thus enables the lifetime thereof to be increased.

10 To this end, the invention provides a method of fabricating a blade for a cutting tool, in particular for a knife, a pair of scissors, a saw, a household appliance, or indeed an industrial tool, the blade being made of steel or an alloy of stainless steels and having
15 at least one cutting edge extending over at least a portion of its periphery, the method being characterized in that it comprises the following steps:

20 a) making a blade body possessing at least one free edge provided in the vicinity of the location of the or each cutting edge;

 b) projecting a make-up material in the form of a powder onto at least one free edge, the hardness of the make-up material being greater than the hardness of the blade body;

25 c) subjecting the make-up material powder to a laser beam so as to form a bead or strip on at least a portion of said free edge; and

 d) forming the cutting edge in the bead or strip of make-up material.

30 Thus, by means of the method of the invention, a blade is made having a cutting edge formed in a make-up material of hardness that is greater than that of the blade. This makes it possible to obtain a blade having a cutting edge of quality and lifetime that are better than
35 those commonly encountered. This method of fabricating a blade gives it a high degree of modularity and the use of

a laser beam ensures intimate melting between the body of the blade and the make-up material.

According to advantageous but non-essential aspects of the invention, the method may incorporate one or more
5 of the following steps:

- the free edge is formed by a flat extending perpendicularly to a main plane of the blade body;
- the free edge is formed by a portion of the blade body extending in a main plane oriented at a non-zero
10 angle relative to a main plane of the blade body;
- the blade body presents dimensions that are slightly smaller than those of the final blade;
- the cutting edge is made by grinding, machining, or abrading at least the bead or the strip of make-up
15 material;
- the blade body is machined or ground at the same time as the cutting edge is being made by machining or grinding;
- the blade body is machined or ground before the
20 step of forming the bead of make-up material;
- prior to step d) of forming the cutting edge, a hardening and tempering operation is performed on the blade body fitted with the bead or strip of make-up material; and
- 25 • said removal of material is performed from an edge of the blade body opposite, relative to the main plane, from the edge of the blade body on which the make-up material is deposited.

The invention also provides a blade for a cutting
30 tool, in particular a knife, a pair of scissors, a saw, a household appliance, or an industrial machine, the blade having at least one cutting edge on at least a portion of its periphery, and being characterized in that it comprises a blade body, the cutting edge being supported
35 on one edge of said blade body.

• The cutting edge and the blade body are made of at least two different materials.

• A cutting tool, in particular a knife, a pair of scissors, a saw, a household appliance, or indeed an industrial machine, including at least one blade as defined above.

5 The invention can be better understood and other advantages thereof appear more clearly in the light of the following description of two implementations of a fabrication method in accordance with the invention, given purely by way of example and made with reference to
10 the accompanying drawings, in which:

• Figure 1 is a perspective view of a cutting tool blade made in accordance with the invention;

• Figure 2 is an end view of the body of the blade shown in Figure 1, during a step a) in a first
15 implementation of the method, without the make-up material;

• Figure 3 is a face view showing steps b) and c) of this fabrication method, with an enlargement showing a type of powder made up of two elements;

20 • Figures 4 and 5 are end views analogous to Figure 2 showing step d) of the method; and

• Figures 6 to 11 show a second implementation of the method.

25 The blade 1 shown in Figure 1 is drawn in simplified form. It is also provided with a support or fastener means (not shown) for the blade, and/or handle means (likewise not shown) for the blade, e.g. a knife handle. The blade 1 presents a blade body 2 of dimensions that are slightly smaller than the overall size of the
30 finished blade 1. The blade body 2 supports a cutting edge 3 in which the cutting edge proper, i.e. the zone that comes into contact with the substance for cutting, is constituted by the make-up material. The blade body 2 is made of at least one stainless steel, advantageously
35 of food grade. For example it may be a standard steel in compliance with the AISI standard: 304L, 316L, 410, 420A, 420B, 420C, 425, 431, 440A, 440B, 440C, or it may be one

of steels of the kind sold by the supplier Sandvik under the references 12C27 and 19C27. The blade body 2 is made using conventional techniques, such as, for example: machining, molding, forging, sintering, grinding, cutting out, or cutting out by laser.

In a first implementation of the method, the body 2 of the blade has its sides 20 and 21 converging a little towards each other so to form a free edge on the body of the blade. Specifically, this free edge is a flat 4 that can be seen in Figure 2 extending perpendicularly to a main plane P of the blade body 2. As shown in Figure 3, in a second step of the method, a make-up material M is deposited in the form of a powder 5 or a mixture of powders on said free edge 4, and preferably under pressure. The powder or powder mixture comprises at least two elements 50 and 51 forming the make-up material M. One of these elements is a particle 50 of great hardness. Advantageously it is a titanium carbide. The other element is a particle 51 of stainless steel of food grade, advantageously of the same type as that making up the blade body 2.

Given the different physical and mechanical properties of the elements 50 and 51 making up the make-up material M in powder form, when they are projected onto the free edge 4 of the blade body, variations are observed in the flow of the powder 5. In order to maintain a uniform deposited bead 6 of powder, pairs of particles 50 and 51 of different types are connected together, e.g. by inclusion. Advantageously, particles 50 of titanium carbide are included in particles 51 of stainless steel. This inclusion may be total, with the titanium carbide then forming the core of a particle made up of both materials, or it may be partial, with the particle of titanium carbide being received in a socket formed in a particle of stainless steel.

In another configuration, the titanium carbide particles 50 are agglomerated with one another by a

binder so as to obtain agglomerations of titanium carbide particles of a size that encourages flow thereof.

In a variant, the powder 5 is made uniform by means of a binder serving to bond together the particles of
5 stainless steel or titanium carbide.

A powder 5 is thus prepared which, in spite of the differences in the density and/or shape of the particles 50 and 51 making it up, nevertheless presents a composition that is uniform at all points along the bead
10 6 of powder 5 that is deposited on the free edge 4 of the blade body 2, with the particles 50 and 51 being distributed regularly, overall.

At the same time as this powder or powder mixture is projected under pressure, it is subjected to a laser beam
15 8 simultaneously with deposition thereof so as to raise it to a melting temperature such that the bead 6 of powder 5 merges intimately with the blade body 2. That technique is known in the field of surface coatings as being a method for applying a facing. As an example
20 illustrating this technique as such, reference can be made for example to the Internet site www.irepa-laser.com, or to the publication "Traitement de surface d'un gaz léger par plasma produit par laser en vue d'améliorer la résistance mécanique" [Surface treatment
25 of a light gas by a plasma produced by laser in order to improve mechanical strength] by Mr. Sicard, Gremi, Orleans.

Once the bead 6 has been deposited and merged onto the edge 4, a finishing operation needs to be performed
30 in order to form the cutting edge 3 proper. This operation consists in machining or grinding so as to shape the bead 6 so as to give it a sharp edge 7, as shown in Figure 5.

In a variant, it is possible to perform the
35 operation of finishing the cutting edge 3 simultaneously with the operation of finishing the blade body 2. Under such circumstances, the bead 6 is deposited on the blade

body 2 before proceeding with the finishing as mentioned above. The grinding or machining are then performed not only on the bead 6, but also on the blade body 2. The machining or grinding are performed using conventional means, for example using diamond grinding wheels.

In another implementation of the method, as shown in Figures 6 to 11, the powder 105 is projected not onto a flat 4 of the blade body, but onto a face F thereof, which face slopes gently towards the cutting edge 103. The face F of the blade body 102 is prepared prior to depositing the make-up material M.

The face F slopes at a non-zero angle α relative to a main plane P' of the blade body 102.

As shown in Figure 7, this slope enables a bead or strip 109 of make-up material M' in powder form 105 to be deposited.

The deposition and sintering of the make-up material powder 105 are performed in such a manner that one of the end zones Z of the strip 109 is adjacent to the end of the face F of the blade body 102.

Advantageously, after this step of depositing and sintering the powder 5 or 105 of make-up material on the blade body 2 or 102, a hardening and tempering operation is performed in conventional manner. This hardening and tempering serves to "release" the stresses to which the blade body 2, 102 and/or the make-up material have been subjected.

Material is removed from the blade body 102 from its face F_0 opposite its face F, as shown in Figures 8 and 9. This removal is performed using conventional techniques, e.g. machining, grinding, or abrasion.

The material constituting the blade body is removed from the vicinity of the cutting edge 103 in a direction and over an area that makes it possible, as shown in Figure 11, to align said face F_0 with one of the faces F_A of the cutting edge 103 once it has been finished. Thus, the faces F_0 and F_A are generally coplanar.

The finished cutting edge 103 has two faces F_A and F_B that make a non-zero angle β relative to each other, advantageously lying in the range 5° to 60° , such that the two faces F_A and F_B define a cutting edge 103 in the form of a point.

This point is formed using conventional techniques of removing material M' from the face F_A . This removal, in particular by machining, grinding, or abrasion, is localized in an end zone Z or a free edge of the strip 109. This end zone Z is constituted by a region of the strip 109 that does not rest on the face F of the body 102, after material of the body 102 has been removed.

Thus, as shown in Figure 11, the cutting edge 103 is formed by a strip 109 of make-up material M' , said strip resting in part on an edge of the blade body 102.

In another configuration, material can be removed or lapped from the face F of the body 102 so as to form a zone for receiving the make-up material M' . The depth of this removal is adapted so that once the make-up material M' has been deposited the top free face of the strip 109 is generally coplanar with the face F of the body 102.

In another embodiment, it is possible to envisage depositing the make-up material M' on only a portion of the cutting edge, e.g. the portion that is stressed the most frequently, so as to increase the lifetime of said portion only.

In another configuration, the faces F_A , F_B of the edge 103 are perpendicular.

In another implementation, it is possible to use a make-up material of a color that is different from the color of the blade body. Similarly, the dimensions and the shape of the strip of make-up material may be different from those described.

In both implementations of the method described above, it is possible to mark the portion of the cutting edge which is formed by the make-up material.

CLAIMS

1. A method of fabricating a blade for a cutting tool, in particular for a knife, a pair of scissors, a saw, a household appliance, or indeed an industrial tool, the blade (1) being made of steel or an alloy of stainless steels and having at least one cutting edge (3; 103) extending over at least a portion of its periphery, the method being characterized in that it comprises the following steps:
 - a) making a blade body (2; 102) possessing at least one free edge (F; 4) provided in the vicinity of the location of the or each cutting edge (3; 103);
 - b) projecting a make-up material (M; M') in the form of a powder (5; 105) onto at least one free edge (F; 4), the hardness of the make-up material being greater than the hardness of the blade body;
 - c) subjecting the make-up material powder (5; 105) to a laser beam (8) so as to form a bead (6) or strip (109) on at least a portion of said free edge (4; F); and
 - d) forming the cutting edge (3; 103) in the bead (6) or strip (109) of make-up material (M; M').
2. A method according to claim 1, characterized in that said free edge is formed by a flat (4) extending perpendicularly to a main plane (P) of the blade body (2).
3. A method according to claim 1, characterized in that said free edge is formed by a portion (F) of the blade body (102) extending in a main plane oriented at a non-zero angle (α) relative to a main plane (P') of the blade body (102).
4. A method according to claim 1, characterized in that the blade body (2; 102) presents dimensions that are slightly smaller than those of the final blade (1).

5. A method according to claim 1, characterized in that the cutting edge (3; 103) is made by grinding, machining, or abrading at least the bead (6) or the strip (109) of make-up material (M; M').
- 5 6. A method according to claim 1, characterized in that the blade body (2; 102) is machined or ground at the same time as the cutting edge (3; 103) is being made by machining or grinding.
- 10 7. A method according to claim 1, characterized in that the blade body (2) is machined or ground before the step of forming the bead (6) of make-up material.
- 15 8. A method according to claim 1, characterized in that prior to step d) of forming the cutting edge, a hardening and tempering operation is performed on the blade body (2; 102) fitted with the bead (6) or strip (109) of make-up material (M; M').
- 20 9. A method according to claim 2, characterized in that said removal of material is performed from an edge (F_0) of the blade body (102) opposite, relative to the main plane (P'), from the edge (F) of the blade body (102) on which
- 25 the make-up material (M') is deposited.
10. A blade for a cutting tool, in particular a knife, a pair of scissors, a saw, a household appliance, or an industrial machine, the blade having at least one cutting
- 30 edge on at least a portion of its periphery, and being characterized in that it comprises a blade body (2; 102), the cutting edge (3; 103) being supported on one edge of said blade body (2; 102).
- 35 11. A blade according to claim 10, characterized in that the cutting edge (3; 103) and the blade body (2; 102) are made of at least two different materials.

12. A cutting tool, in particular a knife, a pair of
scissors, a saw, a household appliance, or indeed an
industrial machine, characterized in that it includes at
5 least one blade made according to claim 10.

A B S T R A C T

A METHOD OF FABRICATING A CUTTING BLADE, AND A CUTTING
BLADE

5

A method of fabricating a blade for a cutting tool, in particular for a knife, a pair of scissors, a saw, a household appliance, or indeed an industrial tool, the blade (1) being made of steel or an alloy of stainless
10 steels and having at least one cutting edge (3; 103) extending over at least a portion of its periphery, the method being characterized in that it comprises the following steps: a) making a blade body (2; 102) possessing at least one free edge (F; 4) provided in the
15 vicinity of the location of the or each cutting edge (3; 103); b) projecting a make-up material (M; M') in the form of a powder (5; 105) onto at least one free edge (F; 4), the hardness of the make-up material being greater than the hardness of the blade body; c) subjecting the
20 make-up material powder (5; 105) to a laser beam (8) so as to form a bead (6) or strip (109) on at least a portion of said free edge (4; F); and d) forming the cutting edge (3; 103) in the bead (6) or strip (109) of make-up material (M; M'). Cutting tools fitted with a
25 blade made in this way present great resistance to wear of the cutting edge of the blade.

30

Translation of the title and the abstract as they were when originally filed by the
35 Applicant. No account has been taken of any changes that may have been made subsequently by the PCT Authorities acting ex officio, e.g. under PCT Rules 37.2, 38.2, and/or 48.3.

